## Implementation Strategy

To facilitate the adoption of the proposed method, it is proposed that the following new section labeled Sec. 7.6.8 be added to SDC:

### 7.6.8 Telescopic Steel Pipe Pins

Telescopic steel pipe pins may be used at column-pier cap connections to eliminate moment transfer between the super and substructure. The lateral load demand shall be based on the plastic shear associated with the overstrength moment [SDC, Section 4.3]. The lateral capacity shall be conservatively based on the nominal material strengths. (The parameters are defined in CCEER Report 10-01 posted under "Publications" button on this site. A design example is presented in App. E of that report.)

$$\varphi H_n > V_o + F_{impact} \qquad \varphi = 0.75 \tag{1}$$

$$H_n = H_o + \left(H_{cr} - H_o\right)\left(\frac{N}{N_u}\right)^{0.7} \tag{2}$$

$$F_{impact} = 1.9\frac{G \times EI}{L_c^{\,3}} \tag{3}$$

- **Reference Lateral Load Capacity**

$$H_o = 1.17\sqrt{M_u D_p f_c'} \le \frac{2A_g f_u}{\pi\sqrt{3}} + \begin{cases} 0.93A_{cp}\sqrt{f_c'} & \text{(ksi)} \\ 2.47A_{cp}\sqrt{f_c'} & \text{(MPa)} \end{cases} \tag{4}$$

$$M_u = 1.45 f_y\left(r_1^3 - r_2^3\right) \tag{5}$$

- **Upper Limit Lateral Load Capacity**

$$H_{cr} = \begin{cases} \text{Factor}\,1 \times \left(0.16A_c\sqrt{f_c'} + \dfrac{A_{sp1} f_{ys} d_1}{s_1}\right) + \dfrac{A_{sp2} f_{ys} d_2}{s_2} + \dfrac{1.45M_u}{D_{bearing} + D_p} & \text{(ksi)} \\ \text{Factor}\,1 \times \left(0.4A_c\sqrt{f_c'} + \dfrac{A_{sp1} f_{ys} d_1}{s_1}\right) + \dfrac{A_{sp2} f_{ys} d_2}{s_2} + \dfrac{1.45M_u}{D_{bearing} + D_p} & \text{(MPa)} \end{cases} \tag{9}$$

$$\text{Factor}\,1 = 0.45\frac{D_{bearing}}{B} + 0.6 \tag{10}$$

For the circular column: $A_c = \dfrac{\pi}{4}\left(B^2 - D_p^{\,2}\right)$ (11)

For the square column: $A_c = B^2 - \dfrac{\pi D_p^{\,2}}{4}$ (12)

- **Maximum Effective Axial Load**

$$N_u = \begin{cases} \text{Factor1} \times A_c \quad (\text{ksi}) \\ 0.007 \times \text{Factor1} \times A_c \quad (\text{MPa}) \end{cases} \tag{13}$$